WHAT IS CLAIMED IS:

1. A fuel cell catalyst material containing catalyst particles having a composition substantially represented by

$$AT_xN_u \qquad (1)$$

wherein A contains Pt or Pt and at least one noble metal element selected from the group consisting of Ru, Pd, Au, and Ag; T contains at least one element selected from the group consisting of Fe, Co, Ni, Sn, Mn, Cr, V, Ti, Mo, Nb, Zr, W, Ta, and Hf; and atomic ratios $\underline{x}$ and $\underline{u}$ fall within ranges $0 \leqq x \leqq 4$ and $0.005 \leqq u \leqq 1$, respectively.

2. A material according to claim 1, wherein an average diameter of the catalyst particles is 0.5 nm to 500 nm.

3. A material according to claim 1, wherein an average diameter of the catalyst particles is 0.5 nm to 50 nm.

4. A material according to claim 1, wherein a content of the at least one noble metal element in the element A is not more than 60 at%.

5. A material according to claim 1, wherein the atomic ratio $\underline{x}$ falls within a range $0.25 \leqq x \leqq 4$.

6. A membrane-electrode assembly comprising an anode electrode, a cathode electrode, and an electrolyte layer provided between the anode electrode and cathode electrode,

wherein at least one of the anode electrode and cathode electrode contains catalyst particles substantially represented by

$$AT_xN_u \qquad (1)$$

wherein A contains Pt or Pt and at least one noble metal element selected from the group consisting of Ru, Pd, Au, and Ag; T contains at least one element selected from the group consisting of Fe, Co, Ni, Sn, Mn, Cr, V, Ti, Mo, Nb, Zr, W, Ta, and Hf, and atomic ratios $\underline{x}$ and $\underline{u}$ fall within ranges $0 \leqq x \leqq 4$ and $0.005 \leqq u \leqq 1$, respectively.

7. A fuel cell comprising an anode electrode, a cathode electrode, and an electrolyte layer provided between the anode electrode and cathode electrode,

wherein at least one of the anode electrode and cathode electrode contains catalyst particles substantially represented by

$$AT_xN_u \qquad (1)$$

wherein A contains Pt or Pt and at least one noble metal element selected from the group consisting of Ru, Pd, Au, and Ag; T contains at least one element selected from the group consisting of Fe, Co, Ni, Sn, Mn, Cr, V, Ti, Mo, Nb, Zr, W, Ta, and Hf, and atomic ratios $\underline{x}$ and $\underline{u}$ fall within ranges $0 \leqq x \leqq 4$ and $0.005 \leqq u \leqq 1$, respectively.

8. A fuel cell catalyst material manufacturing method comprising nitriding a Pt-containing catalyst

precursor at a temperature of 200℃ to 1,000℃ for 0.05 to 100 hrs in a gas atmosphere containing NH_3 with a partial pressure of 0.05 atm or more.

9. A method according to claim 8, wherein the partial pressure is not more than 20 atm.

10. A fuel cell electrode comprising a catalyst layer which contains a catalyst material particles containing a ferromagnetic catalyst having a composition represented by formula (2) below, and in which at least one part of catalyst material particles are arranged along one direction:

$$RT1_uM1_vA1_w \qquad (2)$$

wherein R contains at least one noble metal element selected from the group consisting of Pt, Ru, Pd, Au, and Ag; T1 contains at least one element selected from the group consisting of Fe and Co; M1 contains at least one element selected from the group consisting of Mo, Sn, Ni, W, Ti, Zr, Nb, V, Ta, Hf, Mn, and Cr; A1 contains at least one element selected from the group consisting of N, C, B, and P; and atomic ratios u, v, and w fall within ranges $0.2 \leqq u \leqq 4$, $0 \leqq v \leqq 1$, and $0 \leqq w \leqq 1$, respectively.

11. An electrode according to claim 10, wherein the catalyst material particles contains ferromagnetic catalyst particles in an uncarried state, conductive particles carrying ferromagnetic catalyst particles, or both the uncarried ferromagnetic catalyst particles and

the conductive particles carrying the ferromagnetic catalyst particles.

12. An electrode according to claim 10, wherein the catalyst material particles arranged along one direction occupy not less than 30% of a total amount of the catalyst material particles.

13. An electrode according to claim 10, wherein said one direction is a thickness direction of the catalyst layer.

14. An electrode according to claim 10, wherein a content of the catalyst material particles on one surface of the catalyst layer is larger than that of the catalyst material particles on the other surface of the catalyst material.

15. An electrode according to claim 10, wherein the atomic ratio $\underline{w}$ falls within a range $0 < w \leqq 1$.

16. A membrane-electrode assembly comprising an anode electrode including a collector and an anode catalyst layer provided on the collector, a cathode electrode, and an electrolyte layer provided between the anode electrode and cathode electrode,

wherein the anode catalyst layer contains catalyst material particles containing a ferromagnetic catalyst having a composition represented by formula (2) below,

at least one part of the catalyst material particles stack along a thickness direction of the anode catalyst layer, and

in the anode catalyst layer, a content of the catalyst material particles on a surface facing the collector is larger than that of the catalyst material particles on a surface facing the electrolyte layer:

$$RT1_uM1_vA1_w \quad (2)$$

wherein R contains at least one noble metal element selected from the group consisting of Pt, Ru, Pd, Au, and Ag; T1 contains at least one element selected from the group consisting of Fe and Co; M1 contains at least one element selected from the group consisting of Mo, Sn, Ni, W, Ti, Zr, Nb, V, Ta, Hf, Mn, and Cr; A1 contains at least one element selected from the group consisting of N, C, B, and P; and atomic ratios u, v, and w fall within ranges $0.2 \leqq u \leqq 4$, $0 \leqq v \leqq 1$, and $0 \leqq w \leqq 1$, respectively.

17. A membrane-electrode assembly comprising an anode electrode, a cathode electrode including a collector and a cathode catalyst layer provided on the collector, and an electrolyte layer provided between the anode electrode and cathode electrode,

wherein the cathode catalyst layer contains catalyst material particles containing a ferromagnetic catalyst having a composition represented by formula (2) below,

at least one part of the catalyst material particles stack along a thickness direction of the cathode catalyst layer, and

in the cathode catalyst layer, a content of the catalyst material particles on a surface facing the electrolyte layer is larger than that of the catalyst material particles on a surface facing the collector:

$$RT1_uM1_vA1_w \quad (2)$$

wherein R contains at least one noble metal element selected from the group consisting of Pt, Ru, Pd, Au, and Ag; T1 contains at least one element selected from the group consisting of Fe and Co; M1 contains at least one element selected from the group consisting of Mo, Sn, Ni, W, Ti, Zr, Nb, V, Ta, Hf, Mn, and Cr; A1 contains at least one element selected from the group consisting of N, C, B, and P; and atomic ratios u, v, and w fall within ranges $0.2 \leqq u \leqq 4$, $0 \leqq v \leqq 1$, and $0 \leqq w \leqq 1$, respectively.

18. A fuel cell electrode manufacturing method comprising:

forming an undried catalyst layer on a support by coating the support with a slurry containing catalyst material particles, a proton conductive material and an organic solvent, the catalyst material particles containing ferromagnetic catalyst particles; and

drying the catalyst layer under a magnetic field of not less than 0.1 tesla.

19. A method according to claim 18, wherein the drying is performed by setting the undried catalyst layer with support such that a direction of a line of

magnetic force is parallel to a thickness direction of the catalyst layer between a pair of magnetic poles.